Building and Appliance Efficiency Office

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California Energy Commission

RESIDENTIAL STANDARDS

Questions and Answers

Q ***Does a CF-1R need to be signed and submitted for alterations?***

Yes. All building permit applications must include a Certificate of Compliance (CF-1R).

Q ***If I install an additional water heater as part of an addition, can I still use the prescriptive compliance approach to perform an "addition-alone" analysis?***

Yes. You may demonstrate compliance with the space conditioning and envelope requirements for the addition, but whether you use prescriptive or performance compliance, you need to show compliance with the water heating budget for all water heaters in the residence. Several options are available, as found in the ***Residential Manual*** , pages 7-6 through 7-7 (revised December 1992).

If the proposed water heating system which includes both existing and new water heaters does not comply, you must use an existing-plus-addition performance compliance approach for the entire building. This allows you to make up for the water heating system through the envelope or space conditioning system.

Q ***When showing compliance for an increase in water heaters, is my existing water heater assumed to be "standard" (that is, 50 gallon, gas-fired unit with a 0.53 energy factor)? What if it is an electric water heater? Do I need to install an R-12 wrap?***

Regardless of the fuel type or storage capacity, you may assume an existing water heater is a 50 gallon gas unit with a 0.53 energy factor for compliance with an existing-plus-addition approach. An R-12 insulation wrap is not part of that assumption, and you do not have to install an R-12 wrap. However, if either the existing or new water heater does not have an R-12 wrap, the DHW-1 form is used to account for the lack of external insulation.

Q ***Why do the standards prohibit the use of medium-base incandescent lamp sockets in some bathroom and kitchen lighting fixtures? Doesn't this rule out all other types of lighting sources, including metal halide lamps?***

The ***Energy Efficiency Standards*** (Section 150(k)3) do not allow medium-base incandescent lamp sockets for those fixtures providing general or high efficacy lighting. This is to prevent high efficacy lamps from being replaced with less efficient screw-in bulbs. HID lamps can be obtained with various bases which may fit in the socket. NOTE: If you want to design kitchens and baths with HID lamps, be selective because most HIDs take time to start up or "fully light."

Q ***Do new residential buildings or additions consisting of block walls (for example, converting a garage into living space) have to comply with the R-13 minimum wall insulation requirement? If not, what insulation R-value do they need?***

Questions and Answers (continued)

No. Section 150(c) of the ***Energy Efficiency Standards*** applies to framed walls. The amount of insulation needed, if any, will vary depending on the compliance approach selected. Performance compliance (points or computer) with the standards may not require any additional insulation if the overall compliance is achieved without insulation in that space. Prescriptive compliance may require some level of insulation, depending on the climate zone, package selected, and whether the walls are light (block) or heavy mass. Use ***Residential Manual*** Appendix B, Materials Reference, to determine the R-value of the mass wall alone. If additional insulation is required, it must be integral with the wall or installed on the outside of the mass wall (***Energy Efficiency Standards***, Section 151(f), Tables 1-Z1 through 1-Z16, Note 1).

Q ***When modeling/accounting for greenhouse windows, which compliance approach allows the use of the "assumed" U-value of 0.75 for skylights and greenhouse windows? Do I use the entire glass area?***

In additions and alterations only, you can use a 0.75 U-value for dual-glazed greenhouse windows or skylights with any compliance method. In new construction, the actual U-value of fenestration products is used for compliance documentation/calculations. For greenhouse windows, the area of glass is the rough opening.

Q ***What U-value do I use for glass block? Does it need a label?***

FRAME	SITE BUILT	MANU-FACTURED	U-VALUE*	LABEL REQUIRED
None	X		0.57	No
None		X	0.57	**
Metal	X		0.72	NO
Metal		X	0.72	Yes**

***** Values are for "fixed" glass block. If product is "operable," use an appropriate U-value for dual-pane glass.

****** If, or when, product is labeled, use the rated U-value.

Reference: Residential Manual, pp. 8-8 through 8-9.

Q ***What shading coefficient do I use for glass block?***

From Table G-11a (G-11b for points compliance) in the ***Residential Manual***, you can either:

1. use the shading coefficient (SC) for dual glazing with the appropriate frame type (none or metal), or
2. obtain the manufacturer's published SC for glass alone, then enter the table to get the appropriate SC based on frame type.

NOTE: Interior shading device is either a standard drape or the actual shading device.

Q ***My home will have a combination of fixed and operable windows. In determining the appropriate U-value for fenestration products, can I assume all windows are "fixed" in my compliance calculations?***

You may assume the more conservative of the default values listed for fixed and operable windows. (Operable windows generally have a more conservative default value but this is not always the case with site built fenestration products.) Alternatively, you may calculate a weighted average U-value based on the actual condition of the windows. NOTE: Typical windows with a fixed portion and an operable portion are operable.

Q ***When modeling ventilation for computer compliance, if I have a mix of window opening types, can I model default "sliders" for the "operable window type"?***

Yes. This is acceptable because the programs, in determining the ventilation area associated with the standard design, assume that all windows are sliders (***Residential Manual***, p. 5-15).

Q ***Is calling a window "substantially shaded" still an available credit (shading coefficient of 0.20)?***

No. This option was removed from the 1992 ***Energy Efficiency Standards***.

(continued on page 3)

NONRESIDENTIAL STANDARDS

Questions and Answers

Q ***Who can sign the Certificate of Compliance forms? Where can I call if I have more questions?***

The person who can sign the Certificate of Compliance is the person who can legally accept responsibility for a project, as regulated by the ***Business and Professions Code*** .

For example, a mechanical *engineer* can sign and take responsibility for mechanical design work; a mechanical *contractor* can only sign and take responsibility for design work that he/she will install. (Most types of residential construction do not require a licensed person for either design or construction work.)

The scope of work is the determining factor in whether a particular license is required in order to accept responsibility for a project and subsequently sign the Certificate of Compliance. Licensed professionals with questions about their ability to accept *responsibility* for a given project can contact the appropriate office within the Department of Consumer Affairs:

Engineers	—	(916) 263-2222
Contractors	—	(916) 255-3900
	or	(800) 321-2752
Architects	—	(916) 445-3394

If you are signing a Certificate of Compliance, it is up to you know whether you are authorized to take such legal responsibility for work being done. If you are not licensed, you may need to consult with an attorney to determine if you can legally take responsibility.

Q ***Is the table for metal framing on the the ENV-3 form correct?***

No. Until ENV-3, "Proposed Metal Framed Assembly," is revised, use Table B-4 of the ***Nonresidential Manual*** (page B-31). This will be corrected in an errata.

Q ***If all the glass is the same for a building, do I need to separate the glass area/orientation on the ENV-2 form?***

Not always. The key is if the orientation must be indicated, then each orientation must be listed separately. On part 2 of 4, "Overall Envelope Method ENV-2," for example, you can combine all glass with the same U-value.

Q ***Are door areas considered in envelope calculations? If so, where? And do they have to meet a U-value requirement?***

The area of doors is included only in the gross wall area (not in the exterior wall area) for prescriptive compliance. For performance compliance, doors are modeled as an opaque surface. (Any glass in doors must be included in window calculations.) There are no U- or R-value requirements applicable to opaque doors (***Energy Efficiency Standards*** , Section 143(a)7) and approved computer programs model doors with the same characteristics in both standard and proposed design.

Q ***Envelope compliance was done under the previous energy standards for a conditioned shell building. Now a space is being leased. Do interior walls need insulation?***

Because the whole space is conditioned, interior wall insulation is not required. NOTE: These walls are often insulated to reduce noise, and if an adjacent space is unoccupied it may be cost effective to insulate this wall.

Q ***In an unconditioned multi-tenant shell, if a space adjacent to my tenant space is currently unoccupied, do I assume interior walls are demising walls even though the space may not remain unconditioned?***

(continued on page 4)

Questions and Answers (continued)

Yes. Prescriptive compliance requires that any demising walls/partitions be insulated to R-11; performance compliance requires that insulation levels modeled (including demising walls) be installed.

Q ***Can you explain how I determine which fans make up a fan system for determining if I have 25 horsepower?***

The ***Energy Efficiency Standards*** (Section 144(c)) limit fan power only when individual fan systems exceed 25 horsepower at design conditions. A fan system is made up collectively of all fans within the space conditioning system. A space conditioning system consists of the components that must function together to deliver and exhaust conditioned air in a space. When more than one space conditioning system serves a zone, fan power is the total of all fans serving the zone. Fans that can operate independently of each other comprise separate space conditioning systems. For example, each air handler in a central plant is considered a separate space conditioning system.

Total fan power does not include:

1. additional power needs caused by air treatment or filtering systems with final pressure drop of more than one inch water gauge,
2. fans that move only unconditioned air, such as condenser fans and mechanical room exhausts, and
3. fans associated with a process within the building, such as fume hood exhausts. (***Nonresidential Manual*** , pages 4-32 through 4-33.)

Q ***How do I show compliance for central plant systems that are oversized for future capacity needs? For example, I am ducting off the central plant system to space condition five offices and one control room — the rest of the system is for manuacturing process loads (≥ 900,000 Btu boilers/ chillers) with 100 percent air flush in the manufacturing area.***

Prepare energy calculations/load calculations for the five offices and control room; plans and specifications documenting future loads must accompany the energy compliance documentation. On the MECH-2 form, where installed capacity is larger than needed, the explanation should indicate "excess capacity for future manufacturing area."

Q ***Can the Complete Building Method for lighting compliance be used for any building type?***

Yes. The Complete Building Method (***Energy Efficiency Standards*** , Section 146(b)1) is available for all nonresidential buildings where there is a lighting permit, plans and specifications for the entire building, as defined in Section 101. Table 1-M (Section 146(b)1) contains a list of specific building types. You are limited to one building type (based on the primary occupancy). If your building type is not listed you can use the "all others" category (0.8 watts/square foot). NOTE: Other methods for lighting compliance are the area category method (Section 146(b)2), tailored method (Section 146(b)3), or the performance approach (Section 141(b)2).

Q ***Can the complete building method for lighting be used for an addition alone or tenant improvement?***

No. The complete building method is only a compliance option when there is a lighting permit, plans and specifications involving the entire building (***Energy Efficiency Standards*** , Section 146(b)1).

Q ***Can I use the tailored lighting and area category methods in the same structure?***

You are limited to one method per permit (***Energy Efficiency Standards*** , Section 146(b)). Each permit applicant can select a lighting compliance method independent of the remainder of the building.

Q ***How are categories selected in the Area Category Method for lighting compliance (Energy Efficiency Standards, Section 146(b)2)?***

The category selections are based on the primary function occurring in an area surrounded by floor to ceiling partitions. Each primary function must be listed separately. Select the primary function based on the defined "occupancy types" found in Section 101(b). Any function not defined may be categorized as "support space."

Q ***Please provide additional guidance for display calculations in the tailored lighting method (Section 146(b)3) (LTG-4 form).***

When can I take credit for displays?

You can take credit for displays only when such areas are called out on the plans. These credits are sometimes called "use it or lose it allowances" because your allowed watts will either be the calculated allotment (e.g., 2.2 watts per square foot of wall area) or your proposed design watts, whichever is less.

What if the display lighting exceeds its allotment and I don't want to change the design?

Lighting allotments from the gross sales area, or any area other than display, can be used to provide additional lighting for the display. On the LTG-4, part 1 (tailored LPD summary), the total allowed watts are a combination of display lighting, gross sales area, and support spaces. At the time of installation, allowed lighting from the gross sales area can be used to supplement the allowed watts for displays. (This is reflected in the "actual lighting power" section of the LTG-2 where "adjusted actual watts" cannot exceed "total allowed watts" from LTG-4. Information from the LTG-2 is then carried forward to the LTG-1.)

Is the floor area for feature floor displays subtracted from the gross sales floor area?

No. Neither is the area of feature wall displays subtracted from the gross sales wall area.

What types of lighting can be considered wall display lighting?

The display lighting must be "confined to the area of the display" (Section 101(b)). For a wall display this could be valance lighting or fixed directional lighting.

When is a display a "feature display?"

A feature display requires special highlighting to attract attention and visually distinguish the display from the surrounding area (Section 101(b)). Feature displays get 13 to 26 watts per square foot and cannot exceed 10 percent of gross wall or floor area (stores with less than 800 square receive an allotment of up to 1,000 watts for feature floor displays).

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New Publication

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